Data on Facilities with Oil-Filled and Process Equipment

United States Environmental Protection Agency

INTRODUCTION

This document presents information the U.S. Environmental Protection Agency (EPA) has acquired that may be relevant in assessing whether alternate regulatory requirements would be appropriate for facilities subject to the Spill Prevention, Control and Countermeasure (SPCC) rule (40 CFR part 112) with oil-filled and process equipment. EPA is making this information available for public review and comment as part of its process of considering alternative approaches that would ensure protection of human health and the environment from oil spills occurring at these facilities. This document can be found in EPA Docket No. OPA-2004-0008.

The information includes relevant portions of documents from a number of sources, including correspondence (letters, memorandums, white papers, email messages, etc.) submitted to EPA staff following the promulgation of the revised SPCC rule. Also included are relevant portions of comments entered into the following official SPCC rulemaking dockets:

Initial promulgation and subsequent proposed rules:

- OPA-1973-0001 (SPCC-1) Proposed Rule (July 19, 1973); Final Rule (December 11,1973)
- OPA-1991-0001 (SPCC-1P) Proposed Rule (October 22, 1991)
- OPA-1993-0001 (SPCC-2P) Proposed Rule (February 17, 1993)
- OPA-1997-0002 (SPCC-7) Proposed Rule (December 2, 1997)

Extension of the compliance deadlines for the 2002 amendments:

- OPA-2002-0001 Proposed Rule (January 9, 2003); Final Rule (April 17, 2003)
- OPA-2004-0003 Proposed Rule (June 17, 2004); Final Rule (August 11, 2004)

Information from the rulemaking dockets is referenced with its docket document number at the end of the excerpt (e.g., OPA-2002-0001-0037). References for comments submitted to the 1997 and earlier dockets refer to the older docket numbering system (e.g., SPCC-7-2-31) to facilitate locating the document at the EPA Docket Center since electronic versions are not available online.

The excerpts below present ideas for new regulatory thresholds and definitions as well as alternatives that could potentially replace parts of existing regulations for facilities with oil-filled and process equipment. EPA is interested in receiving comments that can assist the Agency in assessing the merit of these alternatives. EPA is specifically interested in receiving any evidence, including data and analyses, related to claims made within this document. The Agency is soliciting comments only on the excerpted data referenced below.

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12. Association of Electric Cooperatives. *Letter to Superfund Docket, Re: Comments to 12-2-97 Proposed Rule: Oil Pollution Prevention & Response; Non-transportation Related Onshore and Offshore Facilities*. 2/2/98. SPCC-7-2-57. (excerpt)

13. Indiana Statewide Association of Rural Electric Cooperatives Regulatory Program. *Letter to the EPA Docket Center, Re: Comment pertaining to SPCC compliance date extension as proposed in Federal Register Vol. 68, No. 6, January 9, 2003.* 1/21/03. OPA-2002-0001-0037. (excerpt)

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17. Tennessee Valley Authority. *Email to Mark W. Howard, Subject: TVA Equipment Data.* 9/19/01. SPCC-7-2-L21. (excerpt)

18. Utility Solid Waste Activities Group. Prepared by Piper, Marbury, Rudnick & Wolfe LLP. *Letter to Hugo P. Fleischman, Re: Electric Utility Data Estimating Quantities of Operating Electrical Equipment at Substations Within Specified Volumetric Ranges.* 8/22/01. SPCC-7-2-L15. (excerpt)

19. Utility Solid Waste Activities Group. Prepared by Piper, Marbury, Rudnick & Wolfe LLP. *Letter to Hugo P. Fleischman, Re: Revised Electric Utility Data Estimating Quantities of Operating Electrical Equipment Containing Less than 55 Gallons of Oil*. *8/*27/01. SPCC-7-2-L28. (excerpt)

20. Utility Solid Waste Activities Group. *Letter to EPA Docket Center, Re: Comments on EPA's Proposal to Extend the Compliance Deadline for the final July 17, 2002, SPCC Rule Amendments.* 1/29/2003. OPA-2002-001-0092. (excerpt)

21. Utility Solid Waste Activities Group. *Letter to Mr. Dave Evans, Re: Response to EPA Data Request on Utility Operating Electrical Equipment.* 1/12/2004. (excerpt)

22. Consolidated Edison Company of New York, Inc. *Letter to Emergency Response Division, Re: EPA Proposed Rule: Oil Pollution Prevention; Non-Transportation Related Onshore and Offshore Facilities, 56 Fed. Register 54612 (October 22, 1991).* 12/20/91. SPCC-1P-2-100. (excerpt)

23. Entergy. *Letter to Emergency Response Division, Re: Docket Number SPCC-2P.* 4/16/93. SPCC-2-P-2-1132. (excerpt)

24. Fuller & Henry, Attorneys at Law. *Letter to Emergency Response Division.* 12/23/91. SPCC-1P-2-189. (excerpt)

25. Pacific Gas and Electric Company. *Letter to Emergency Response Division, Re: SPCC Phase 1 Rulemaking.* 12/23/91. SPCC-1P-2-184. (excerpt)

26. PacifiCorp Electrical Operations. *Letter to Emergency Response Division.* 12/20/91. SPCC-1P-2-41. (excerpt)

27. Utility Solid Waste Activities Group. *White Paper on EPA's SPCC Amendments Final Rule Signed on January 10, 2001.* 5/9/2001. (excerpt)

C. Buried Cable Systems

28. Association of Electric Cooperatives. *Letter to Superfund Docket, Re: Comments to 12-2-97 Proposed Rule: Oil Pollution Prevention & Response; Non-transportation Related Onshore and Offshore Facilities*. 2/2/98. SPCC-7-2-57. (excerpt)

29. Utility Solid Waste Activities Group, Utility Water Act Group, Edison Electric Institute, American Public Power Association, and National Rural Electric Cooperative Association on Oil Pollution Prevention. *Letter to the United States Environmental Protection Agency, Re: Docket No. SPCC-2P.* 4/19/93. SPCC-2P-2-1198. (excerpt)

Please note that sections where original document text have been omitted are indicated with the symbol "..."

I. Process Equipment

1	Hogan & Hartson, LLP. *Memorandum to David Evans, Re: Suggested Discussion Topics for SPCC Program Dialogue.* 2/28/2003. (excerpt)

...

Process tanks. The definitions of “bulk storage container” and “storage capacity” should be revised to clearly exclude containers, such as manufacturing process tanks and conveyance units, that are part of an active industrial production system and are not being used as passive storage. While “manufacturing equipment” is excluded from the definition of “bulk storage container,” it is not clear which types of equipment or units the term “manufacturing equipment” encompasses. ...

...

2	U.S. Small Business Administration. Prepared by Jack Faucett Associates, Inc. *Spill Prevention Control and Countermeasures (SPCC) Issues, Alternatives and Recommendations: PROCESS TANKS.* 7/14/2003. (excerpt)

...

Process tanks are containers that can contain oil in an industrial production process, but are not used for passive oil storage. The EPA states in its proposed amendments to 40 CFR Part 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*, that "process tanks are intermediate tanks within a process that are not used for the storage of materials prior to their introduction into the production process or for the storage of finished products or by-products from the production process." *[Federal Register: February 24, 2003 (Volume 68, Number 36), Page 8578]*

...

Recommendations:

1. Add the above definition of process tanks to § 112.2.

2. Change the last sentence in definition of bulk storage container in § 112.2 to the following:

Process tanks (as defined below) and oil-filled electrical, operating, or manufacturing equipment are not bulk storage containers.

3	U.S. Small Business Administration. Prepared by Jack Faucett Associates, Inc. *Spill Prevention Control and Countermeasures (SPCC) Issues, Alternatives and Recommendations (Draft. Ver. 4): MANUFACTURING PROCESS SYSTEMS AND OPERATIONAL EQUIPMENT.* 9/30/2003. (excerpt)

Background: We reviewed SPCC/OPA regulations and did not find a specific regulatory definition of "operational equipment" or manufacturing process equipment or systems. The definitional section incorporated by reference in the 1973 SPCC regulations discusses "non-transportation related on-shore and off-shore facilities" by list of examples, including "industrial facilities… which *use* and store oil."

...

... EPA's preamble discussion of "Use of Oil" says that "[f]acilities that use oil operationally include…facilities containing electrical transformers, and *certain* hydraulic *or manufacturing equipment*." They fail to explain which "certain …manufacturing equipment" is covered, other than to reference "oil-filled" equipment, which they exempt from the definition of bulk storage.

Because of this failure to specify which manufacturing equipment is covered by which regulations (or contain oil for "ancillary uses") further issues arise about the appropriate applicability of the SPCC.
...

Additional Background: Industrial facilities frequently contain one or a series of production processes. These processes incorporate tanks and conveyances (including piping and other structures) that are used in the course of changing raw, feedstock, and intermediate materials into finished products. Processes can include separating, mixing, blending, heating, cooling, chemically deriving or treating, or physically changing materials (e.g., by grinding, stamping, tooling, lubricating, etc.). Processes may be continual (one tank or piece of equipment conveyed into the next), or occur as separate operating "units". *These processes, and their tanks and conveyances, large and small, are NOT used for the passive "storage of oil".*

...

Recommendations:

1. EPA should explicitly exclude "manufacturing process systems/operational equipment" from the definition of "bulk storage container" and the oil storage capacity calculations.
2. EPA can define Manufacturing Process Systems/Operational Equipment as follows: "tanks, operational equipment, coolant systems, and conveyances (including piping or other structures) that are part of an industrial or manufacturing process and not exclusively used for the passive storage of oil."

II. Oil-Filled Operational Equipment

A. Machining Coolant Systems

4	American Petroleum Institute (API) Coalition. *White Paper: Oil in Operational Equipment.* 4/2/2003. (excerpt)

...

... The preamble does clarify that facilities with equipment containing oil for ancillary purposes are *not* considered bulk storage and therefore the secondary containment and other requirements for bulk storage containers do not apply. However, Section 112.7(c) (containment and/or diversionary structures or equipment) can be interpreted to apply to facilities with oil in operating equipment.

...

Oil reservoirs associated with operational equipment, including gear boxes, machining coolant systems *[EPA Note: See Excerpt 5]* and heat transfer systems, receive routine maintenance due to their integral role in the functioning of the manufacturing equipment. These reservoirs are inspected routinely for leaks and feature low oil level/low oil pressure cutoff switches...

Recommendations:
...

If oil in operating equipment is included in the SPCC rule, it should be regulated in a separate subsection with minimal requirements for containment and diversionary structures or equipment.

5	Alliance of Automobile Manufacturers. *Alliance of Automobile Manufacturers Recommendations to EPA to Address Machining Coolant Systems for Purposes of SPCC and OPA Regulations.* 5/22/2003. (excerpt)

...

[Machining] coolant systems are used for various machining operations, such as drilling, grinding, milling, boring, etc., of parts. The coolant in these processes has multiple functions. It is used to lubricate the parts during machining, to prevent the parts from overheating (thereby extending tool life), to provide rust inhibition, and to convey scrap cuttings and grindings to the filtering system. Coolant systems can range in size from a single machining coolant system of 200 gallons for a smaller individual piece of equipment, to a large centralized system up to 175,000 gallon capacity serving multiple "lines" of equipment, or series of such systems (e.g., in an engine and transmission operation). Large engine and transmission plants would typically contain around 60-80,000 gallons in each centralized cooling system. These coolant systems contain water with small concentrations (i.e. 3-8%) of oil mixed in it. The coolant system is pumping and circulating continuously. ...

...

B. Lubricating Oil

6	Dairyland Power Cooperative. *Letter to U.S. Environmental Protection Agency, Water Program Operations, Division of Oil and Hazardous Materials, Subject: Proposed Regulations; Oil Pollution Prevention - Federal Register, 38 FR 19334, 40 CFR Part 112*. 9/4/73. SPCC-2-53. (excerpt)

...

Subsection 112.1(d) does not specifically exclude as a regulated source those relatively small (less than 50 gallons) reservoirs for lubricating oil which are an integral part of the many types of outdoor mechanical equipment. Our specific concern is those various gear cases and lubricant wells included in the design of coal unloading equipment, conveyors, and stackers. Based on our experience, operating this equipment is not likely to create oil spill problems affecting the nation's waterways. We request this type of equipment be exempted from regulation.

...

III. Oil-Filled Electrical Equipment

A. Alternative Regulatory Approaches

7	American Petroleum Institute (API) Coalition. *White Paper: Electrical Equipment*. 4/2/2003. (excerpt)

...

Discussion

The citations above, as well as substantial preamble language, bring electrical equipment into the realm of Part 112 regulation, although EPA does clarify that electrical equipment and other operational uses of oil (*e.g.*, hydraulics, operating, and other manufacturing equipment) are *not* bulk storage of oil and hence the secondary containment and other requirements for bulk storage containers do not apply. However, section 112.1(b), section 112.7(c) (containment and/or diversionary structures or equipment), and the definition of "facility" remain applicable to facilities with electrical equipment. The burdens imposed by the rule's regulation of oil-filled electrical equipment remain significantly disproportionate to the low level of risk and exceptionally positive spill history associated with such equipment. The risk of discharge of oil from electrical equipment is significantly below that of tanks. Electrical equipment is often constructed of heavier and more corrosion resistant steel than are tanks and is built to resist greater pressure differentials, including full vacuum. Additionally, electrical equipment is essentially self-monitoring because a loss of dielectric fluid leads to failure of the device and an interruption in electrical power transmission. Finally, substation electrical equipment is often surrounded by a gravel bed that provides significant restriction to movement of any oil that may be released. Published data show the rate of discharge of oil into navigable water from electrical equipment is less than one one-hundredth of one percent; yet the requirement for containment and/or diversionary structures or equipment imposes significant costs at a large number of facilities shown to pose extremely low levels of risk.

Recommendations

There are several approaches for addressing the imbalance between the high cost of SPCC compliance and the low risk of oil discharge from electrical equipment:

- Defer application of SPCC regulations to electrical equipment until EPA can better assess how to tailor regulation of this equipment;
- Create a volumetric threshold of at least 20,000 gallons per article of electrical equipment for full SPCC regulation; allow equipment above 1320 gallons and below 20,000 gallons to have only a Part 109 contingency plan, subject to preparing a full SPCC plan if a discharge to navigable waters occurs; equipment below 1320 gallons would not be regulated under Part 112;

...

8	Utility Solid Waste Activities Group et al. Prepared by Piper & Marbury LLP *Comments of the Utility Solid Waste Activities Group, the Edison Electric Institute, the American Public Power Association and the National Rural Electric Cooperative Association on Oil Pollution Prevention and Response; Non-Transportation Related Onshore and Offshore Facilities, 62 Fed. Reg. 63812 (December 2. 1997).* 2/2/98. SPCC-7-2-31. (excerpt)

...

Under USWAG's proposal, an electrical equipment response plan ("EERP") would be a sui generis document intended to address the specific circumstances presented by electrical equipment. The electrical equipment response plan would be a document that describes the utility's procedures for responding to releases of dielectric fluid from electrical equipment. This type of plan would describe the positioning of response crews and equipment, identify procedures for contacting response contractors if needed, and describe the procedures that spill responders would use to contain a spill and summon additional assistance if necessary. The scope of the proposed EERP would not address every aspect of an SPCC plan or an OPA response plan because those programs were designed to apply to oil storage and transfer facilities. However, as we have described in the past, the risks posed by electrical equipment are de minimis, when the totally enclosed nature and structural strength of the equipment, its operational characteristics, and its spill history are properly taken into account. USWAG, therefore, believes that the use of EERPs will provide the same level of environmental protection while substantially reducing the costs associated with the current SPCC program.

...

... Electrical equipment is built to more stringent standards than typical tanks. Second, because a release of dielectric fluid results in an interruption in the transmission of electric power, most units are effectively self-monitoring. Finally, dielectric fluid is infrequently added to or removed from electrical equipment, practically eliminating transfer-related releases, which, as EPA's survey results indicate are a major source of releases from tanks, and also eliminating the structural stress that results from filling and emptying.

...

USWAG believes that EPA should amend the SPCC regulations to make clear that area response plans for electrical equipment can be utilized in lieu of site-specific SPCC plans. This change would result in a substantial reduction in the paperwork burden that would be imposed on the electric utility industry by the SPCC program without compromising environmental protection.

In essence, these area response plans treat an electrical transmission and distribution system (or some component of it) as a single facility. Treating them as such is appropriate because the substations and other equipment locations in an electrical transmission and distribution network function in many ways as a single facility. The facilities are under the same management and are serviced by the same group of trained employees. These facilities are generally unstaffed and are serviced by mobile crews both for routine inspection and maintenance and for emergency response. Moreover, the equipment and layout (and thus the response methods) are similar for locations within a given system. Accordingly, from an operational perspective, these locations function much as if they were a single facility. It therefore makes sense to treat them that way in drafting and implementing a plan to respond to releases of dielectric fluid.

...

One step that EPA could take to reduce the paperwork burden for a number of facilities is to allow the use of a single plan in situations where a single entity operates a number of facilities that are similar in design. While the Plan would still have to meet all SPCC requirements (and thus is substantially different from the electrical equipment response plans discussed in Section III), having only one plan to maintain and review instead of many would substantially reduce the paperwork burden on the owner or operator of the facilities while maintaining the same level of environmental protection.

...

9	Utility Solid Waste Activities Group. Prepared by Piper Rudnick LLP. *Explanation of Proposed Amendment to SPCC Rules to Address the Requirements for Onshore Oil-Filled Electrical Equipment.* 2/5/2004. (excerpt)

...

[T]he industry has implemented various features that minimize the possibility of a release of oil reaching surface water bodies. *See, e.g.*, USWAG Position Paper sent to EPA Administrator Christine Todd Whitman and OIRA Deputy Administrator Donald R. Arbuckle, May 9, 2001, at p.3 ("USWAG Position Paper"). These features include:

- Construction of equipment using heavier and more corrosion resistant steel than tanks, designed to resist greater pressure differentials.
- Thorough testing prior to placing equipment into service and frequent inspection during use.

...

- Self-monitoring equipment—a loss of dielectric fluid leads to equipment failure and an interruption of electric power transmission. The equipment at electrical substations is typically equipped with remotely monitored low level and high temperature alarms. The need for reliability assures prompt detection of release of oil, enhancing the probability that response action will be able to prevent a discharge as described in § 112.1(b).
- Substation electrical equipment is typically surrounded by a gravel bed, which serves as a passive fire quench system in the event that device failure results in ignition of the dielectric fluid. In addition to fire safety benefits of this design, the gravel beds provide a significant restriction to movement of any oil that may be released, further reducing the probability of a discharge as described in § 112.1(b).

...

The universe of electrical equipment used in distribution of electricity includes transformers, circuit breakers, voltage regulators, switches, and capacitors, as well as the urban networks of underground dielectric fluid-filled transmission cable systems. Our 1991 comments estimated that approximately two million pieces of electrical equipment at 48,000 substations could be affected by the amendments proposed that year, ranging in size from two gallons to approximately 100,000 gallons. ...

...

... [W]e recommend that EPA establish two regulatory tiers for the equipment that exceeds 1320 gallons. The lower tier would apply to what we propose to define as a "qualified facility." This tier would apply to equipment with storage capacity greater than 1320 gallons but not exceeding 20,000 gallons. In addition, to qualify for this tier,

- the equipment would have to be monitored or be subject to a rapid response program, such as the utility industry's Supervisory Control and Data Acquisition system ("SCADA"), that would reasonably ensure that any discharge as described in § 112.1(b) would be expeditiously controlled;
- the equipment must not have had a discharge as described in § 112.1(b) within the previous 10 years; and
- the facility must not have been directed by the Regional Administrator under § 112.1(f) to prepare and implement an SPCC Plan within the past 10 years.

A "qualified facility" would have the option of preparing an oil spill contingency plan consistent with Part 109 in lieu of preparing an SPCC Plan and would also be required to prepare a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful. The general provisions for

compliance with applicable inspection and testing requirements (but not the integrity testing requirements for bulk storage containers), the recordkeeping, and the training requirements would apply to “qualified facilities.”

...

The third tier would apply to all equipment that is ineligible or has lost its status as a “qualified facility.” Such a facility would be subject to all the existing provisions of Subpart A of Part 112...

...

10	Entergy. *Comments Pertaining to Oil Pollution Prevention and Response; Non-Transportation Related Onshore and Offshore Facilities, 62 Fed. Reg. 63812 (December 2, 1997).* 1/29/98. SPCC-7-2-18. (excerpt)

...

Regardless of the applicability of this regulation, it has been Entergy's policy that it is our responsibility to clean up oil releases in order to ensure compliance with the Part 110 oil discharge prohibition. Therefore, having a response-based plan that details oil spill contingency measures to be implemented by the field personnel, even for the low volume pole-mounted transformers that do not exceed the volume thresholds of Part 112, has been deemed prudent.
...

...

B. Further Characterization of the Electrical Equipment Universe

11	American Electric Power Service Corporation. *Letter to Environmental Protection Agency, Water Program Operations, Division of Oil and Hazardous Wastes, Re: Proposed Oil Pollution Prevention Regulations.* 9/11/73. SPCC-2-63. (excerpt)

...

... This equipment [oil filled equipment in electric utility transmission and distribution systems] ranges in size from small 2.4 kv transformers located on distribution poles to large 765 kv transformers at major substations. While AEP [American Electric Power] System companies operate over 1200 substations, it would be virtually impossible to calculate the total number of oil filled transformers, including distribution transformers, which are located on our System.

...

As noted above, we have oil-filled equipment in varying sizes scattered throughout our System. This includes transformers, circuit breakers, and associated storage facilities of varying capacities. Once installed at a site, oil in transformers is not normally changed. Oil in breakers is changed, but generally not more frequently than at four year intervals. ...

...

...[T]he installation of permanent structures or equipment to contain possible discharges would not be practical. Since these substations are unattended and many are located in relatively remote areas, there exists a problem of disposing of accumulated snow and rainwater in any of the systems specified in the proposed guidelines. It appears that the only reasonable and practical solution at those sites, if any, where discharges can reasonably be expected to occur is reliance on plans for deployment of temporary containment devices coupled with adequate clean-up measures. Plans for use of such devices would include temporary floating booms, temporary dikes, straw dams, and use of oil absorbents.

...

12	Association of Electric Cooperatives. *Letter to Superfund Docket, Re: Comments to 12-2-97 Proposed Rule: Oil Pollution Prevention & Response; Non-transportation Related Onshore and Offshore Facilities*. 2/2/98. SPCC-7-2-57. (excerpt)

...

The use of dielectric fluid can be compared to that of antifreeze (coolant) in a car's engine. Antifreeze is an integral part of the car's engine. It is not stored or consumed and is used for operational purposes.

...

Electrical equipment is a closed system. Transfer of oil is performed rather infrequently. Additionally, the design of electrical equipment is very specific and uses the stringent engineering standards to avail "breakdowns." As such spills from electrical equipment occur very infrequently. Be aware that a breakdown in equipment could very well mean an electrical outage (in which case work crews are dispatched to remedy the situation immediately). Reliability of its system is of major concern to utilities, thus electrical equipment is always well maintained. (Utilities typically use monthly inspections and periodic testing of equipment).

Also, note that substation design requires gravel beds (approximately 4-6 inches) in order to minimize the risk of electrical shock. Electrical equipment is placed on concrete slabs surrounded by gravel beds. Because of the storage capacity of the gravel, oil spills rarely reach navigable waters. The oil is contained on site due to the design described above, and cleanup occurs rather promptly because a problem is detected immediately. ...

...

The regulation should formally recognize system-wide response plans for electrical equipment as opposed to requiring site-specific plans.

...

We agree with EPA, a system-wide plan is appropriate for electric utilities. We recommend the regulation specifically allow system-wide plans to avoid misinterpretation at the EPA regions and state levels.

...

13	Indiana Statewide Association of Rural Electric Cooperatives Regulatory Program. *Letter to the EPA Docket Center, Re: Comment pertaining to SPCC compliance date extension as proposed in Federal Register Vol. 68, No. 6, January 9, 2003.* 1/21/03. OPA-2002-0001-0037. (excerpt)

...

By their very nature electrical substations and other electrical equipment locations are often spread over a wide area and covering varying terrain. ...

Another complication experienced in addressing electrical equipment evaluation and/or site modification is the fact that many utilities own and maintain electrical equipment which is actually located on the property or facilities of other (e.g. industrial sites). ...

...

14	Northeast Utilities System. *Letter to The Superfund Docket, Re: Oil Pollution: Prevention; Non-Transportation Related Onshore and Offshore Facilities.* 2/19/98. SPCC-7-2-65. (excerpt)

...

... Because electrical equipment is electrified, water must be able to drain away from the equipment to avoid shock and fire hazards. This makes secondary containment impracticable at many electrical equipment locations. ...

...

15	Piper, Marbury, Rudnik & Wolfe, LLP. *Letter to Hugo P. Fleischman, Re: Electric Utility Operating Electrical Equipment Data.* 9/24/01. SPCC-7-2-L18. (excerpt)

...

VOLUMETRIC RANGES FOR OPERATIONAL ELECTRICAL EQUIPMENT						
Entergy Companies' Electrical Equipment at Transmission Stations						
Equipment Type	**Volume (gallons)**				**No. at Entergy Stations**	**No. Extrapolated to Whole Industry**
	Range	**Mean**	**Median**	**Mode**		
Autotransformer	89-26,500	6660	4755	5495	288	12,151
Oil Circuit Breaker	12-9,600	718	156	55	4,588	193,586
Oil Circuit Recloser	25-80	49	46	60	166	7,004
Reactor	4500-20,000	11,647	11,697	5920	10	422
Transformer	38-29,000	5603	5160	5615	1,512	63,797
Vacuum Circuit Breaker	25-80	61	70	80	8	338
Vacuum Circuit Recloser	38	38	38	38	4	169
Voltage Regulator	46-4,800	1049	1180	68	603	25,443

...

16	Piper, Marbury, Rudnick & Wolfe, LLP. *Letter to Hugo P. Fleischman, Re: Additional Electric Utility Operating Electrical Equipment Data.* 10/4/01. SPCC-7-2-L34. (excerpt)

...

Data on Secondary Containment

The responding utilities reported over 28,480 facilities with electrical equipment containing over 1,320 aggregate gallons of oil. Approximately 25 percent of these facilities were reported to have physical containment (e.g. berms, dikes, retaining walls, curbing, culverting, gutters); 16 percent reported the use of sorbents; and more than 75 percent were reported to have gravel beds around oil-filled electrical equipment installations. Some facilities reported the use of more than one of these options (e.g. sorbents *and* gravel beds, physical containment *and* sorbents).

...

DISCHARGES TO NAVIGABLE WATERS REPORTED TO THE NATIONAL RESPONSE CENTER FROM OIL-FILLED ELECTRICAL EQUIPMENT AT FACILITIES WITH GREATER THAN 1320 AGGREGATE GALLONS OF OIL 1997-2001

Utility	Number of Facilities	Number of Reported Discharges to Navigable Waters, 1997-2001
A	400	0
B	1030	0
C	1255	0
D	3000	7
E	278	0
F	632	1
G	229	0
H	780	2
I	1000	10
J	301	2[1]
K	139	0
L	783	4
M	1600	7
N	2000	0
O	475	0
P	1140	1[2]
Q	100	0
R	800	0

S	700	1
T	382	0
U	400	0
V	800	3
W	1500	6
X	420	0
Y	32	0
Z	1000	0
AA	325	2
BB	1116	0
TOTAL	22,617	46

[1] Data available from 1998-2001 only.
[2] Data available from 1999-2001 only.

17	Tennessee Valley Authority. *Email to Mark W. Howard, Subject: TVA Equipment Data.* 9/19/01. SPCC-7-2-21. (excerpt)

...

Summary of Oil Filled Equipment Based on Volume (1)(2)
(percentages and numbers are cumulative)

		Total Pieces of Equipment with Quantity Identified	**Less than 55 gallons**	**Less than 500 gallons**	**Less than 1,000 gallons**	**Less than 2,100 gallons**	**Less than 2,500 gallons**
PTs	No %	906 NA	338 37%	823 91%	906 100%	906 100%	906 100%
CTs	No %	369 NA	129 35%	346 94%	361 98%	361 98%	361 98%
OCBS	No %	1,204 NA	79 7%	366 30%	398 33%	1,198 99.5%	1,203 99.9%
Pwer Trans	No %	1,309 NA	17 2%	146 11%	261 20%	455 35%	491 38%
V Regs	No %	35 NA	0 0%	5 14%	9 26%	24 69%	26 74%
Reactors	No %	62 NA	0 0%	47 75%	51 82%	56 90%	56 90%
Totals		3,885 NA	563 15%	1,733 45%	1,986 51%	3,000 77%	3,043 78%

PT = Potential Transformer
CT = Current Transformer
OCB = Oil Circuit Breaker
Pwer Trans = Power Transformer
V Regs = Voltage Regulator

1)The data base for oil filled operating equipment identified in this table is not complete. Only equipment identified as oil filled and where an oil volume is provided is included in the table. The actual number of oil filled potential transformers and current transformers is significantly higher, i.e., at least several thousand for each. However, the volume ranges shown for each type of equipment are expected to be representative.

2) No coupling capacitor voltage transformers (CCVTs) are included in the table. At least 90% of these are expected to be below 55 gallons. TVA has approximately 1,800 CCVTs.

18	Utility Solid Waste Activities Group. Prepared by Piper, Marbury, Rudnick & Wolfe LLP. *Letter to Hugo P. Fleischman, Re: Electric Utility Data Estimating Quantities of Operating Electrical Equipment at Substations Within Specified Volumetric Ranges.* 8/22/01. SPCC-7-2-L15. (excerpt)

...

The Entergy database summary was assembled in 1994 from an equipment inventory management system; consequently the numbers shown must be regarded as conservative estimates of the number of devices at Entergy's transmission substations today. In addition, the Entergy data do not purport to reflect the company's entire operating equipment universe - the data reflect only equipment at transmission substations, not at distribution substations or other installations such as transformers, cable systems, and service centers. Our extrapolation attempts to account for equipment at utility industry transmission and distribution substations, but even so encompasses only approximately 50% of those equipment installations that likely would be subject to the pending SPCC rules in the form signed by the prior Administrator. Therefore, our utility industry extrapolation does not include equipment from the estimated additional 50,000 electric utility installations (*i.e.*, distribution transformers, vaults, service centers, and cable systems) that would also be subject to those rules.

...

[EPA Note: See Excerpt 19 for data described above]

19	Utility Solid Waste Activities Group. Prepared by Piper, Marbury, Rudnick & Wolfe LLP. *Letter to Hugo P. Fleischman, Re: Revised Electric Utility Data Estimating Quantities of Operating Electrical Equipment Containing Less than 55 Gallons of Oil*. *8/*27/01. SPCC-7-2-L28. (excerpt)

[EPA Note: See Excerpt 18 for a description of data source]

...

OPERATIONAL ELECTRICAL EQUIPMENT DEVICE BREAKDOWN FOR SUBSTATIONS BY VOLUME OF OIL CONTAINED IN IN-SERVICE EQUIPMENT

Combined Totals for Entergy Companies' Transmission Substations and Extrapolation for All Substations Within Utility Industry as a Whole

Device Volume Ranges (gallons)	***Number of Pieces of Entergy Electrical Equipment Within Specific Volume Range at Transmission Substations[1]***	***Number of Pieces of Electrical Equipment at Substations Within Utility Industry as a Whole (via extrapolation from Entergy data)[2]***
0-54	1096	46,245
55-100	1428	60,253
101-500	1313	55,401
501-1500	870	36,709
1501-5000	1448	61,097
5001-10,000	779	32,869
10,001-15,000	163	6,878
15,001-20,000	79	3,333
>20,000	34	1,435

[1]The pieces of Entergy operating equipment described above are located in facilities that are large, high voltage substations with a minimum secondary voltage of 13.8kV. These pieces of equipment are not from distribution substations, although the extrapolated industry-wide numbers do account for distribution substations. Entergy data are based on 1994 database information; therefore, the numbers given are low estimates. A different equipment data management system has been adopted post-1994, but time constraints on the data request did not allow for querying data in the new system.

[2]USWAG believes there are approximately 50,000 electrical substations (both transmission and distribution) within the utility industry. Entergy has approximately 1,185 transmission substations, which represents 2.37% of the 50,000 total substations within the utility industry. The numbers in the Utility Industry column therefore reflect the numbers in Entergy's column divided by 0.0237.

20	Utility Solid Waste Activities Group. *Letter to EPA Docket Center, Re: Comments on EPA's Proposal to Extend the Compliance Deadline for the final July 17,2002, SPCC Rule Amendments; Docket No. OPA-2002-001*. 1/29/2003. OPA-2002-001-0092. (excerpt)

...

Although the electrical utility industry consists of companies with a wide range of total SPCC-regulated facilities, many companies are reporting they have in excess of 1,000 facilities, often in multiple EPA regions. One USWAG member, for example, has more than 1,500 facilities in 11 states; another has 2,000 facilities in four states; yet another has over 3,100 facilities in roughly 30 states. We estimate that more than 100,000 utility industry facilities nationwide will require reassessment in light of the new amendments, whatever their final form. The requirement for individual site visits prior to certification of plans and the limited number of P.E.s familiar with the new amendments and/or available to write plan amendments makes meeting the proposed one year deadline highly doubtful. Specifically, meeting the deadline will be extremely difficult for our smaller utility companies with fewer regulated facilities, including the rural electric cooperatives. Many of these companies are very small businesses with few employees-at least 158 rural electric cooperatives in the United States have 20 or fewer employees, and at least 30 such cooperatives have 10 or fewer employees. Additionally, these limited numbers represent *entire* payrolls and not even the more limited number of P.E.s capable of certifying and amending SPCC plans. ...

...

21	Utility Solid Waste Activities Group. *Letter to Mr. Dave Evans, Re: Response to EPA Data Request on Utility Operating Electrical Equipment.* 1/12/2004. (excerpt)

...

The data we are submitting today comes from approximately 30.5% of the industry located throughout the country – again primarily from large investor-owned utility company members – and these data are quite consistent with the 2001 Entergy data. Slightly over two-thirds of the equipment – 68.2% – is under 1,320 gallons. Another 31.4% contains from 1,320 to 20,000 gallons, while a small number – 0.5% – are above 20,000 gallons. We found that the small business segment of our industry – primarily, but not exclusively, the rural electric cooperatives – was generally unable to provide a breakdown of their equipment universe by volumetric ranges, though anecdotal information from these smaller utilities suggests very few >20,000 gallon pieces of equipment.

...

In our 1991 comments on the proposed SPCC amendments, we provided EPA with an estimate of discharges to navigable waters from electrical equipment at utility substations of an average per year of 10 to 15 discharges from equipment larger than 2 to 3 gallons. We then translated these numbers into percentage terms – 0.003% of the industry's equipment universe at substations per year. *See* Comments of the Utility Solid Waste Activities Group et al. on Oil Pollution Prevention; Non-Transportation-Related Onshore and Offshore Facilities, submitted Dec. 23, 1991, at pp. 42-43. We also provided company-specific data from four large utilities, three of which had had no discharges in the previous 10 years and one utility with 560 pieces of equipment at 280 substations that had had three discharges in the previous five years. *Id.* at 43.

In 2001, your staff asked us for more recent data on discharges to navigable waters from electrical equipment reported to the National Response Center. Our response dated October 4, 2001, reported a total of 46 reported discharges between 1997 and 2001 from 22,617 facilities with electrical equipment containing over 1,320 aggregate gallons of oil.

Once again, in response to your recent request for updated information, companies with a total of 24,551 substations reported a total of 51 discharges of oil, or approximately 0.21%. In other words, the actual rate of discharge from electrical equipment was such that only one discharge to navigable waters occurred for every 476 substations over a ten year period. Reported spills that did not result in discharges to navigable waters are not included. In addition, some companies submitted data on reported discharges only from substations that would have exceeded the volumetric threshold for applicability of the Part 112 rule, while other companies listed all their reported discharges from substations. Some of our members were only able to provide data going back about five years, so we have greater confidence in the accuracy of the data in the most recent period than we do for the period immediately following 1991.

...

22	Consolidated Edison Company of New York, Inc. *Letter to Emergency Response Division, Re: EPA Proposed Rule: Oil Pollution Prevention; Non-Transportation Related Onshore and Offshore Facilities, 56 Fed. Register 54612 (October 22, 1991).* 12/20/91. SPCC-1P-2-100. (excerpt)

... EPA's exemption of electrical equipment from application of 40 CFR Part 280 is based upon the Agency's recognition that oil-filled equipment posed at the time of rule promulgation and continues to pose a relatively low-level of environmental risk given the generally small quantities of fluids involved, the self-monitoring nature of the equipment and the historically low leak rate incidence. Similar recognition must be given to electrical equipment in the application of Part 112. Con Edison, for example, has over 280 substations system-wide and over 1400 building and sidewalk vault locations in Manhattan alone that would be subject to Part 112 as currently proposed. ...

The minimal nature of the risk is further supported by industry experience. Electric utility estimates are of only some 10 to 15 minor discharges per year to navigable waters from an aggregate of over 40,000 substations nationwide. Over the past five years, for example, Con Edison has had only one substation that has discharged to navigable waters. ...

...

EPA Note: *40 CFR Part 280 rule text is as follows:*

280.10(b) The following UST systems are excluded from the requirements of this part:

...

(3) Equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment tanks.

23	Entergy. *Letter to Emergency Response Division, Re: Docket Number SPCC-2P.* 4/16/93. SPCC-2P-2-1132. (excerpt)

...

When electrical oil-filled equipment is placed in a substation for use, it is energized and operated under low pressure in order to prevent moisture intrusion. This reduces the possibility of corrosion to the interior wall of the vessel. In addition, due to the high cost and required availability of this equipment, our best management practices require that this equipment be inspected regularly to ensure it remains in proper working order. As a result, it is clear that the probability of an oil spill from this equipment is very low, and the potential for "substantial harm" to the environment due to an oil spill reaching navigable waters is virtually nonexistent.

...

24	Fuller & Henry, Attorneys at Law. *Letter to Emergency Response Division.* 12/23/91. SPCC-1P-2-189. (excerpt)

...

... U.S. EPA excluded this equipment from regulation as underground storage tanks by concluding that such equipment poses "a relatively low level of risk" to the environment and the regulatory burden upon enforcement agencies would be considerable in that such agencies would have to involve itself with an "overwhelmingly large universe [of sources] … with very little discernible environmental benefit." See 53 Fed. Reg. at 37108. ...

...

25	Pacific Gas and Electric Company. *Letter to Emergency Response Division, Re: SPCC Phase 1 Rulemaking.* 12/23/91. SPCC-1P-2-184. (excerpt)

...

The design, construction, and inspection standards applied to electrical equipment are substantially more stringent than those applied to tanks because electrical equipment is designed and constructed to ensure maximum reliability and to be self monitoring using constant level monitors as a leak in such equipment will lead to equipment failure and an interruption in electrical service.

...

26	PacifiCorp Electrical Operations. *Letter to Emergency Response Division.* 12/20/91. SPCC-1P-2-41. (excerpt)

...

... [PacifiCorp Electrical Operations] believes that the SPCC regulations should not be applied to electrical equipment. PEO bases this opinion on the following factors: 1) historical data demonstrating the low potential for discharge from electrical equipment; 2) the majority of electrical substations are provided with a gravel bed which would retard the flow of oil offsite; 3) as an integral part of electrical power distribution systems, electrical equipment is subject to stringent construction, inspection and operational standards. ...

...

27	Utility Solid Waste Activities Group. *White Paper on EPA's SPCC Amendments Final Rule Signed on January 10, 2001.* 5/9/2001. (excerpt)

...

First, electrical equipment is constructed of heavier and more corrosion resistant steel than are tanks and is built to resist greater pressure differentials, including full vacuum. The units are thoroughly tested before being put into service and are routinely inspected while in use. In addition, electrical equipment has many fewer valves and less associated piping than tanks, and therefore has a reduced likelihood of a discharge from these points. In addition, the dielectric fluid in the equipment is generally mineral oil. ...

Second, electrical equipment is essentially self-monitoring because a loss of dielectric fluid leads to failure of the device and an interruption in the transmission of electrical power. Such interruptions are immediately responded to, which minimizes the chance that any release that does occur would reach navigable waters. In addition, substation electrical equipment is typically equipped with remotely monitored low level and high temperature alarms, and any problem that triggers these alarms would be responded to immediately.

Third, substation electrical equipment is often surrounded by a gravel bed, which is designed to act as a passive fire quench system in the event that the device failure results in ignition of the dielectric fluid. These beds provide a significant restriction to movement of any oil that may be released, further reducing the probability that a release would reach navigable waters.

As a result of these features, electrical equipment has an exceptional spill history. USWAG's 1991 comments reported a spill rate of 0.003%. EPA's 1995 SPPC Survey showed that the number of discharges from oil storage facilities exceeds by orders of magnitude the extremely low number of comparable discharges from electrical equipment. ...

...

In our 1991 comments, USWAG proposed that EPA exempt all electrical equipment below 10,000 gallons. ... We estimate that an exemption at 10,000 gallons per unit would exclude more than half the substations likely to be related under the amendments approved by the prior administration. During discussions with EPA staff in the early 1990s, we estimated that a higher cumulative regulatory threshold -for example, at 42,000 gallons---would exclude more than 70% of utility substations from the regulations. Even a significantly lower volume threshold- for example, at 1500 gallons per unit would have a major impact. Although many substations would remain in the regulated universe, the vast majority of distribution transformers - those typically located on the customer's property - would fall outside the program.

...

C. Buried Cable Systems

28	Association of Electric Cooperatives. *Letter to Superfund Docket, Re: Comments to 12-2-97 Proposed Rule: Oil Pollution Prevention & Response; Non-transportation Related Onshore and Offshore Facilities*. 2/2/98. SPCC-7-2-57. (excerpt)

...

Dielectric fluid in electrical equipment, such as transformers, provides a heat transfer mechanism necessary for the operation of the equipment. In transformers, this heat transfer is necessary to make it possible for high voltages to be used. At high voltages, the heat generated within the core and coil of the transformer must be displaced without allowing deterioration to other parts of the transformer. As such, dielectric fluid is used to dissipate heat. Similarly, dielectric fluid is used in other pieces of electrical equipment such as phase angle regulators and underground fluid-filled cable systems [emphasis added] to displace heat generated during operation and/or to insulate. Oil is then used for operational purposes; it is not consumed or stored.

...

29	Utility Solid Waste Activities Group, Utility Water Act Group, Edison Electric Institute, American Public Power Association, and National Rural Electric Cooperative Association on Oil Pollution Prevention. *Letter to the United States Environmental Protection Agency, Re: Docket No. SPCC-2P.* 4/19/93. SPCC-2P-2-1198. (excerpt)

...

...[T]he electric utilities own several million pieces of oil-filled electrical equipment such as transformers, capacitors, and circuit breakers. ... The oil in this equipment is used operationally for cooling. ... Utilities have approximately 100,000 facilities, primarily substations, switching stations, and transformers located in vaults and buildings, where the volume of oil contained in electrical equipment exceeds the 1320 gallon (or 660 gallons for an individual unit) threshold for SPCC regulation. In addition, electric utilities own approximately 3,000 miles of underground cable systems that use oil as a dielectric fluid. [emphasis added]

...